

relationship between the EQD₂ for both treatment locations (CRT, SDRT) and the occurrence of a first CVA was assessed. **Results:** After a median time of 24.9 years from the primary diagnosis and at a median attained age of 31.2 years, 28 survivors had a first CVA. Of them, 18 (64.3%) had ischemic events (Grade 3-4), and 10 (35.7%) had hemorrhagic events (Grade 2-5). One survivor was not treated with CRT nor with SDRT. Subsequently, two survivors had a second, and one a third CVA. The 35-year cumulative hazard in survivors treated with CRT only was 14.2% (95%CI, 3.5-24.9%), in survivors treated with SDRT only 6.8% (95%CI, 0-13.7%), and in survivors who received both CRT and SDRT 24.3% (95%CI, 6.7-41.8%) (Figure). The Cox analyses showed that both treatment locations significantly increased the risk of CVA in a dose-dependent manner (HR_{CRT} 1.02 Gy⁻¹; 95%CI, 1.01-1.03, and HR_{SDRT} 1.04 Gy⁻¹; 95%CI, 1.02-1.05).

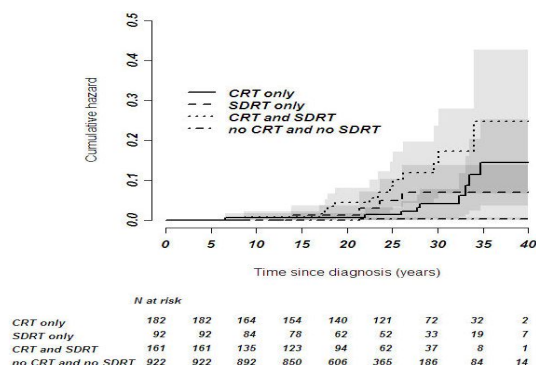


Figure. Cumulative hazards and 95% CIs for the first CVA ≥5 years after the primary cancer diagnosis in survivors treated with CRT only, SDRT only, both CRT and SDRT, and in survivors who had no CRT and no SDRT. Note: The SDRT only group consisted of 95 survivors; SDRT treatment could not be confirmed for 3 survivors, leaving 92 survivors for analysis.

Conclusions: Our results demonstrate that childhood cancer survivors treated with CRT and/or SDRT have an increased risk of CVAs as compared with survivors who had no CRT and no SDRT. Thirty-five years after treatment, almost 1 in 4 childhood cancer survivors treated with both CRT and SDRT experience a symptomatic CVA. In addition, these radiation-associated CVAs occur at a very young age. Therefore, continuing follow-up with a focus on tailored preventive strategies to reduce the risk of CVAs in this young population deserves special attention.

OC-0342

A UK national review of radiotherapy treatment plans for paediatric medulloblastoma in cases of neurotoxicity

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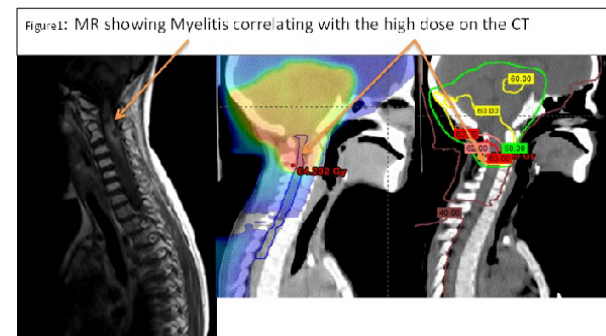
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Purpose/Objective: Paediatric metastatic medulloblastoma requires intensive treatment for the best results. Since 2007 the majority of UK centres used the Milan strategy (High dose Chemotherapy and twice daily Radiotherapy) to treat these patients. There were some reported cases of profound

neurotoxicity and a review of plans and treatment method was done in order to check whether radiotherapy had contributed to the toxicity.

Materials and Methods: Patients with Grade 3-4 neurotoxicity, treated between 2008 and 2014, were identified and the toxicities classified into global and myelitis. Plan data (CT planning scans, Plans and Dosegrids) for the CranioSpinal (CNS) phase 1 and the Posterior Fossa Boost (PFB) phase 2, was collected and imported into Eclipse (Varian). The dosimetry was reviewed for individual and summed phases. Where possible MR images showing myelitis were blended with the dose distribution on the CT scan. A questionnaire was circulated around all Centres to establish the RT technique and immobilisation used.

Results: 10 cases (8 male, all under 12 years), from 6 Centres were reviewed. All the children had a poor response to induction chemotherapy and received thiopeta as part of their high dose chemotherapy regime. The CNS dose was 39Gy in 30 Fr for 9 cases and 31.2 Gy in 1 Fr for 1. All received a PFB to a dose of 59.7 - 60 Gy. All Centres used a conformal Linac based technique with opposed Head fields matched to posterior Spine fields, and a shifting gap. 5 out of 6 centres used a supine technique. 1 Centre used VMAT for the PFB, others a 3DCRT plan. 1 Centre checked plans using summed doses, others checked each phase separately. The myelitis occurred in the PFB volume and it was noted that for these patients the C1 summed dose was >62 Gy, although less than 63Gy (105%), see Fig 1.



Conclusions: There was no evidence of radiation techniques contributing to neurotoxicity. However when the Milan protocol was adapted for the UK, there was no involvement of physics and certain details of the treatment were different, in particular that in Milan the PFB PTV would not include the spinal cord. This review also highlighted the importance of planning and summing both phases in order to assess the combined dose. It is recommended that special attention is paid to the cervical spinal cord dose with a strict dose constraint of 61Gy. Lessons learnt from this review highlight the importance of sharing experience both nationally and internationally especially for rare tumours.

Debate: SBRT / oligometastatic disease: Oligomets then SABR is standard of care

SP-0343

SBRT for oligometastatic disease: For the motion

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Stereotactic Body Radiotherapy (SBRT) is today the accepted standard of care for early stage non-small cell lung cancer if

patients are inoperable due to medical co-morbidities: local tumor control is achieved in >90% of the patients resulting in improved overall survival (OS). Based on the promising experiences in primary lung cancer and other cancer sites, SBRT is currently explored in the setting of oligo-metastatic disease. In this rather rare clinical setting, patients with a limited number of metastases (maximum 3-5) in a limited number of organs (1-2) are treated locally aiming at prolongation of disease-free interval, treatment-free interval and eventually overall survival. Despite the value of any local treatment in the metastatic setting has not been proven in randomized clinical trials, surgery is the guideline-recommended treatment of choice in many cancers e.g. colorectal cancer or renal cell cancer. This presentation will outline the rationale of using SBRT in the oligo-metastatic setting, give a summary of current evidence and compare SBRT with other local treatment options especially surgical resection.

SP-0344

Against the motion

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SABR for oligometastatic disease is a favourite pastime for radiation oncologists looking for application of high precision hypofractionated conformal radiotherapy. This is often fuelled by interests in technology of treatment delivery not infrequently vested in equipment suited for this technique. Yet SABR is just one of a spectrum of local therapies for small lesions (which include surgery and thermal ablation) and evidence for benefit of real value to the patient is weak.

There is reasonable consensus that SABR can achieve prolonged control of individual lesions with reasonable safety providing the lesions are small and the dose is delivered within radiation tolerance of the structure they are lodged in. However, evidence of real benefit for the patient in terms of prolonging survival and improving or maintaining quality of life is hard to come by. The problems include the lack of validated definition of oligometastatic disease, inevitable patient selection and the consequent reporting bias and the lack of randomised studies. In this setting, SABR for oligometastatic disease cannot be considered the standard of care.

SP-0345

For the motion

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SP-0346

Against the motion

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Few evidences are available to justify the integration of stereotactic ablative radiotherapy (SABR) with current systemic approaches in metastatic disease, especially in the first-line setting. The use of SABR is supported by low-level evidence due to retrospective nature of published experiences, heterogeneous group of patients treated across studies, different techniques adopted, different dose and fractionation chosen, different endpoints evaluated, short follow-up, little or no data regarding late and early late toxicity.

Although in most cases very good rate of local control are reported with good toxicity profile, no large studies demonstrated the significant impact of SABR for oligometastases on disease-free and overall survival of patients.

Prospective experience are strongly required to evaluate the potential impact of SABR in the context of standard systemic therapies in a homogeneous disease population, on improving progression-free survival, time to progression, and hopefully overall survival. An overview on the attractive challenge between technical innovation and clinical benefit.

Teaching Lecture: Regional nodes radiotherapy in early breast cancer

SP-0347

Regional nodes radiotherapy in early breast cancer

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Regional radiotherapy (RT) is generally offered to patients operated for node-positive early breast cancer (BC), in particular if >3 nodes are involved. Despite results from randomised trials indicating beneficial effect from regional RT in patients with 1-3 positive nodes (pN1) many of these patients are not offered regional RT routinely (Overgaard et al, NEJM 1997, Lancet 1999, R&O 2007, Ragaz et al, NEJM 1997). The reluctance may be due to a relatively high incidence of loco-regional recurrences (LRR) and poor overall survival (OS) in the trials compared to retrospective studies in the same type of patients treated without regional RT in the same period. Recently the randomised MA.20 trial, which included 1832 patients (85% of the patients had pN1 disease) treated with breast conservation 2000 to 2007, confirmed the beneficial effect of regional RT (Whelan et al, ASCO 2011, abstract). Even node-negative patients operated for a medial or centrally located BC may have a survival gain from irradiating the internal mammary nodes (IMN) and medial supraclavicular (MS) nodes as demonstrated in the EORTC 22922/10925 Trial (Poortmans et al, ECCO 2013, abstract). It is thus likely that the use of regional RT will increase with the publication of these 2 trials.

A new group of patients is now being proposed as candidate for regional RT based on the AMAROS study (Donker et al, Lancet Oncol 2014). In that trial patients diagnosed with T1-2 and sentinel node positive BC were randomised to axillary lymph node dissection (ALND) versus axillary RT. The 1425 patients had an excellent and comparable loco-regional and distant control, but significantly more lymph oedema was seen in the ALND group favouring regional RT.

There are several concerns when planning regional RT, and one is the decision on optimal target delineation. An ESTRO consensus for this is now published. Another concern is the decision about which lymph node levels are the relevant targets to be irradiated. The EORTC 22922/10925 Trial addressed this when randomising 4004 stage I-III patients to \pm RT to the IMN and MS nodes, and showed a gain in 10 year DFS and MFS. The DBCG IMN study based on >3000 patients also showed an OS gain in node positive patients if the IMN were included in the RT fields (Thorsen et al, EBCC 2014, abstract). A third concern is dose and fractionation, because most studies have used 50 Gy/25 fr, but since the publication of a Canadian trial and the START Trial B more centres are now using hypofractionation based on 40-42.5 / 15-16 fr for regional RT despite only limited data support this. Of